tentatively...

day 13

due
Tuesday: 2.6/21-22,27-28,39,41,47

Wednesday: 2.6/57,59-60,65-67 3.1/1-10

Thursday: 2.6/71-73,84,86,93
3.1/15,17-20,27-30,37

Friday: 3.1/43,47,49-50,53 3.2/1-6,8

Monday: 3.1/57-58,63 3.2/9,13,17,20-22,27,31

FRI 9/20 Quiz first part of chapter 2

ALSO... FRI 9/27 TEST - chapter 2

Sep 16-7:16 AM

day 13

2.3/83 Find b, c in $p(x) = x^2 + bx + c$

$\exists$ (translation such that) $\lim_{x \to 2} \frac{p(x)}{x-2} = 6$

So $p(x) = (x-2)(x+4) = x^2 + 2x - 8$

$b = +2$

$c = -8$

to cancel $x-2$

to give me a limit of 6 as x approaches 2

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day 13

2.3/78 $\lim_{x\to 1} \dfrac{x-1}{\sqrt{4x+5}-3}$

subs $\Rightarrow \frac{0}{0}$ "IDK"

$= \lim_{x\to 1} \dfrac{(x-1)}{(\sqrt{4x+5}-3)} \cdot \dfrac{(\sqrt{4x+5}+3)}{(\sqrt{4x+5}+3)}$

$= \lim_{x\to 1} \dfrac{(x-1)(\sqrt{4x+5}+3)}{(4x+5)-9} = \lim_{x\to 1} \dfrac{(x-1)(\sqrt{4x+5}+3)}{4(x-1)}$

$= \lim_{x\to 1} \dfrac{\sqrt{4x+5}+3}{4} = \dfrac{6}{4} = \dfrac{3}{2}$

day 13

No names

FRONT How is the class going?
Anything that should change?

BACK How are You DOING?
Anything you should change?

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2.4/35)

$$\lim_{\theta \to 0^+} \csc x = \lim_{\theta \to 0^+} \frac{1}{\sin x}$$

day 13

"$\frac{1}{0}$"

blows up

$\{+\infty, -\infty, \text{DNE}\}$

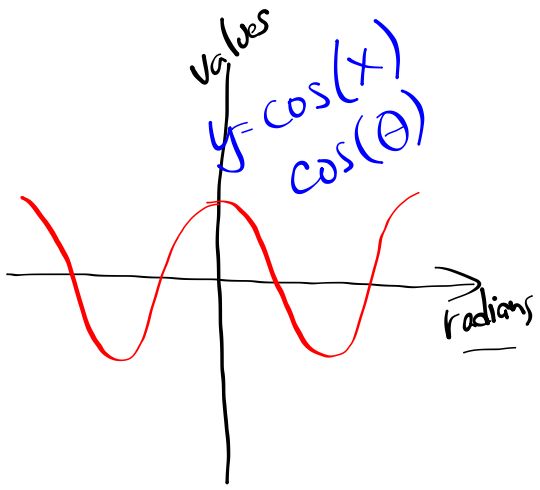
as $x \to 0$ FROM THE POSITIVE SIDE

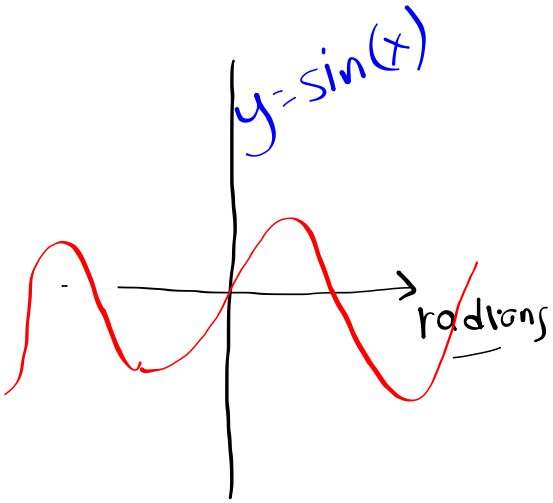
$\sin x$ approaches 0 FROM THE POSITIVE SIDE

so $\lim_{\theta \to 0^+} \csc x = \lim_{\theta \to 0^+} \frac{1}{\sin x} = +\infty$

day 13

Trigonometry (from a function over $\mathbb{R}$ perspective)





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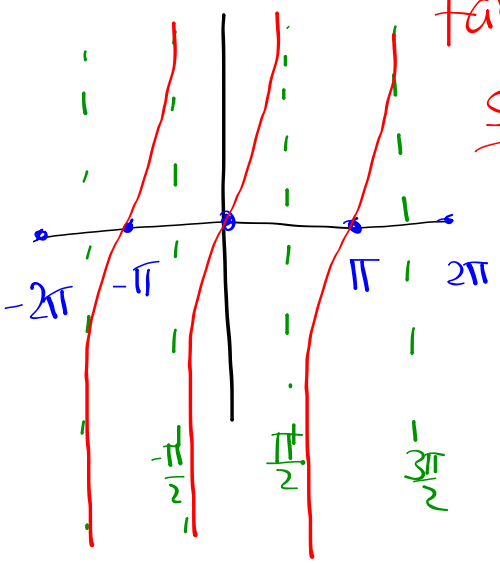
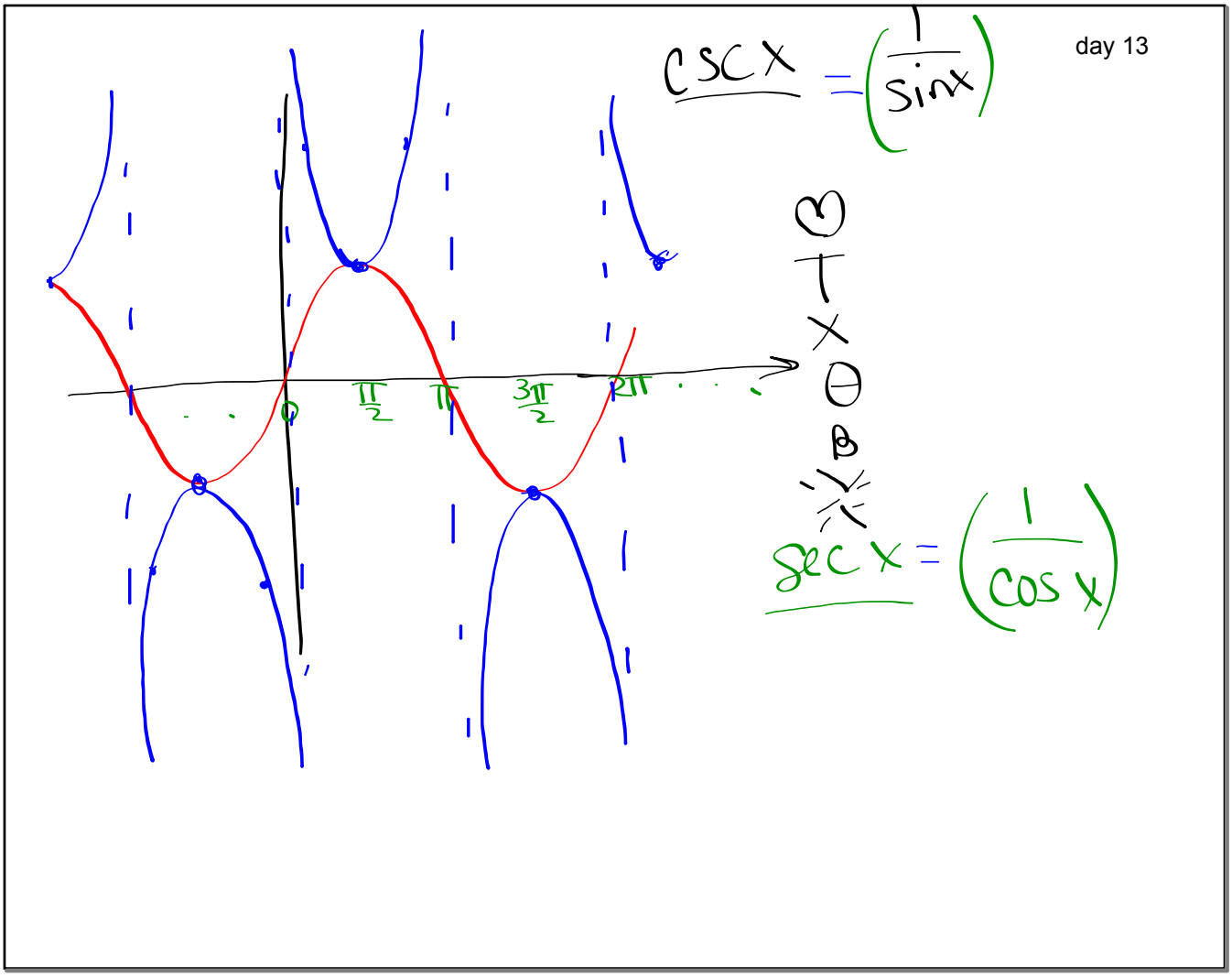


$\tan(x) = \frac{\sin(x)}{\cos(x)}$

5pts

$x = 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$



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day 13

Joy of x

by Steven Strogatz

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day 13

2.4 #37 $\lim_{x \to 0^+} (-10 \cot x) = \lim_{x \to 0^+} \left(-10 \frac{\cos x}{\sin x}\right)$

$= -10 \lim_{x \to 0^+} \frac{\cos x}{\sin x}$ ($\cos x \to 1$, $\sin x \to 0^+$)

$= -\infty$

$\frac{1}{0^+}$ blows up $\{+\infty, -\infty, \text{dne}\}$

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day 13

continuous? → discrete

2-4/1

a) guy falling from a plane

b) quarters in a meter

c) temperature t minutes after midnight

d) number of pts scored

day 13

is $f(x)$ continuous at $x=a$?

i) is $f(x)$ defined at $x=a$?

ii) does $\lim_{x \to a} f(x)$ exist?

iii) does $\lim_{x \to a} f(x) = f(a)$?

if y-y-y then yes

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day 13

think about

$$f(x) = \begin{cases} 0 & \text{if } x \text{ is irrational} \\ x & \text{if } x \text{ is rational} \end{cases}$$

continuous at 0?

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